1497-1507

Hargis & Associates, Inc.
CONSULTANTS IN HYDROGEOLOGY
1735 East Fort Lowell Road, Suite 5
Tucson, Arizona 85719
(602) 881-7300

1497

July 20, 1984

Mr. Samuel Rotrosen
President
Montrose Chemical Corporation
of California
One Metro Plaza, Suite 301
505 Thornall Street
Edison, New Jersey 08837

Re: Torrance - Technical Comments on EPA Draft Work Plan

Dear Mr. Rotrosen:

Pursuant to your request, the second draft of the EPA work plan dated May 31, 1984, has been reviewed. Comments concerning the technical aspects of the work plan are as follows:

SECTION 1: INTRODUCTION

Section 1 is an introduction to the work plan, and comprises subsections on background, work plan summary, and schedule. The work plan summary proposes a two-part field investigation. The first part of the investigation would require collection of soil and groundwater samples on-site, and analyses of the samples for all EPA priority pollutants.

The reason for analyzing for all EPA priority pollutants in soil and groundwater samples during the Part 1 investigation is not presented. Based on available knowledge concerning chemical processes used at the site, the analyses of soil and groundwater samples should be limited to only those compounds known to have been used at the site. Sufficient documentation should be available to establish a target list before commencing the Part 1 investigation. The second part of the investigation would

attempt to define the extent and location of on-site and off-site contamination.

The objective of the two-part study is to collect adequate data to perform the feasibility study, which comprises environmental and public health assessments and selection of the most cost effective remedial alternative. Based on sampling already conducted at the site, it should be possible to decide whether capping of the site, or some other remedial action, is necessary. Sampling of soils already performed at the site is adequate to define the range of concentrations of contaminants in soils at the site. These data indicate that soils are contaminated at the site. Capping the site will prevent transport of sediment-laden DDT off-site, and will eliminate the potential for air-borne transport of contaminants off-site. Capping the site will clearly reduce the risk of off-site transport of contaminants, and will not inhibit additional investigation of the site.

SECTION 2: PHASE I - REMEDIAL INVESTIGATION WORK PLAN

Section 2 comprises a detailed task description of the remedial investigation work plan. Tasks 1 through 9 comprise various administrative tasks, site reconnaissance, literature search, development of health and safety plans for work on the site, quality assurance and sampling plans, mobilization of field equipment, acquisition of permits and other authorizations, and implementation of a community relations plan. Except for the title search described in Task 4, and the community relations program outlined in Task 9, all of the remaining tasks are routine functions that any contractor would perform in preparing for work at the site. No technical comments are offered on these tasks.

The remedial investigation site activities are described in Tasks 10 through 18. Detailed technical comments on these tasks are offered as follows:

Task 10. Performance of Site Mapping, Including A Property Survey and Topographic Survey

Performance of the site mapping, including a property survey and topographic survey, seems unnecessary in the detail which it is proposed. A detailed topographic map

of the area would be required only if a detailed analysis and evaluation of potential soils removal is contemplated. Locations of proposed soil borings and monitoring wells can be located on a simple plan view map. This would avoid the expense of obtaining aerial photography and ground control in order to produce a detailed topographic map. Existing information should be adequate to accurately locate all property lines. The proposed contour interval of one foot also seems to be more detailed than what would be required for a location map. The one-foot contour interval might be useful only if a soils removal plan is to be developed. Until the decision is made on potential soils removal, it is suggested that preparation of a detailed topographic base map be delayed.

Task 11. Performance of Hydrogeologic Investigation.

The laboratory analyses of selected soil samples presented in Table 1 indicates that all soil samples would be analyzed for EPA priority pollutants based on field analysis using an OVA. Table 1 also indicates that one sample of each saturated stratum per boring would be analyzed for EPA priority pollutants.

Analyses for EPA priority pollutants are unnecessary based on what is known about chemicals handled at the plant. Analyses of all soil samples should be limited to only those substances which are demonstrated to have been used at the Montrose facility. The expense of the additional analyses is not warranted. Furthermore, analyses of saturated strata below the water table appears to be a doubtful means of determining contamination. It is difficult to separate contaminants contained in the water from contaminants contained in the solid phase of the aquifer matrix. It is suggested that a more cost-effective approach would be to sample groundwater below the water table and analyze the groundwater for the substances of interest.

It is also suggested that the number of monitor wells be reduced from five to three. Three monitor wells, completed to a depth of about 100 feet below land surface, should be adequate to define the quality of water in the first water bearing zone. There is no justification presented for the five proposed monitor wells. The monitor

wells should be located to assess the potential impact of possible contaminant sources on groundwater quality. The monitor wells should be located in areas where the potential for infiltration and percolation of fluids is at a maximum. Consequently, the monitor wells should be located in the area of the former surface water impoundments which was located in the central portion of the property. This would reduce the number of wells and the number of groundwater samples, which would reduce the cost of the investigation without a significant reduction in usable data.

It is recommended that large-diameter hollow stem augers be used to construct the boreholes. Rotary drilling techniques should not be used to construct the boreholes. Fluids used for rotary drilling will compromise the integrity of any soil samples obtained, and will require extensive development of monitor wells to remove drilling fluids and borehole mudcake. These problems can be avoided if large-diameter hollow stem augers are used. All monitoring wells should be constructed with a minimum 4-inch diameter PVC well screens and casing. Two-inch diameter pipe should not be used. The two-inch diameter casing inhibits adequate development of the monitoring well.

The proposed soil sampling plan in the unsaturated zone does not address the question of mobility of contaminants in the unsaturated zone. Simply collecting a soil sample above the water table, analyzing it for contaminants, and obtaining a positive indication of the presence of contaminants, does not necessarily indicate that the contaminants are moving downward toward the water table. In order to determine vertical movement of contaminants, some demonstration of vertical fluid potentials and vertical flux of fluid must be demonstrated. The program as outlined does not accomplish this.

For example, it is well known that DDT itself is relatively immobile in the subsurface. This is a result of the low solubility of DDT in water. The presence of DDT in the soils does not indicate that downward migration is occurring at the present time, without some explanation of the transport mechanism. It is also well known that volatile organics tend to volatilize into the vadose zone from the water table surface. Collection of soil samples above the water table often indicates the presence of volatile organics, which might be mistakenly assumed to be

contained within the fluid in the vadose zone, when the volatile organics are actually present as vapors in the pore space above the water table. Therefore, the assumption of vertical downward migration of contaminants should not be predicated solely on the positive analytical indication of the presence of contaminants in the soils above the water table.

Task 12. Sampling Monitoring Wells

It is recommended that all wells be equipped with a dedicated submersible pump and electrical control panel contained in a secured vault at the land surface. A bladder pump should not be used to collect the water samples. Because the sampling will be a repetitive process over some period of time, it would be more cost effective to install dedicated pumps that do not have to be removed and cleaned after use.

Sampling of existing off-site wells should definitely not be conducted until after the initial phase of groundwater investigation at the plant site. The nature of geologic materials underlying the site is unknown. The presence of perched groundwater beneath the site is unknown. The depth to the first regional water-bearing zone beneath the site is unknown. The geologic and hydraulic relationship of the first regional water-bearing zone to underlying aquifers is unknown. The ambient chemical quality of groundwater in the area is unknown. The shallow water table aquifers in the Los Angeles Basin are typically not used for water supply because of ambient water quality conditions. The shallow water table aquifers are usually underlain by finer-grained materials that hydraulically separate them from deeper aquifers. It is typically the deeper aquifers that are utilized for water supply in the region.

The geologic framework in the vicinity of the plant site should first be established through inspection of well logs available in the public files, and through test drilling on-site. The vertical distribution of water-bearing units underlying the site can then be determined from on-site test drilling and compared to existing wells in the area. If sampling from monitor wells to be constructed on the plant site indicates hazardous concentrations of contaminants in the groundwater, and if

hydrogeologic conditions indicate transport of contaminants in groundwater to nearby wells is possible, then sampling of selected existing off-site wells is warranted.

Table 2 in Task 12 indicates that groundwater on-site and groundwater off-site would be sampled and analyzed for EPA priority pollutants. Again, it is not necessary to analyze the samples for all priority pollutants rather than only those substances known to have been used or handled on the site. It is recommended that at a maximum only one sample from on-site be analyzed for EPA priority pollutants, and the remainder of the wells be analyzed only for those substances which are known to have been used or handled on-site.

Task 13. On-site Soil and Waste Pile Sampling

The rationale presented for additional soil sampling and analysis is questionable. Although it is true that other chemicals used at the site may affect the migration of DDT due to their desorptive or adsorptive properties, it is unclear why this should be of interest in the unsaturated zone above the water table. If DDT has migrated or is migrating in the unsaturated zone, or has reached the groundwater system, it would be much more efficient to directly sample the affected groundwater and determine if contaminants have been transported to the saturated zone. The effect of other chemicals on the behavior of DDT in the unsaturated zone appears to be of some academic interest, but is of little practical value in designing remedial measures.

Table 3 describes the additional proposed on-site soil sampling. Table 3 indicates that soil samples will be collected to a depth of ten feet below land surface at 18 different locations over the plant site. Based on the previous studies conducted, it is unnecessary in most areas to sample to a depth of ten feet. Data previously collected clearly indicates that certain areas of the plant site were not subject to contamination at depth (Hargis & Montgomery, 1983). Even though some earthwork has been performed on-site, it would not affect the contamination levels at depths beneath the facility.

Table 3 also indicates that soil samples at these 18 locations would all be analyzed for EPA priority

pollutants to a depth of ten feet. Six samples from each boring would be analyzed for EPA priority pollutants at approximate analytical cost of $1,000-per-sample. This results in a total analytical cost of about $108,000 for the 18 proposed soil borings. This is unnecessary in view of the detailed knowledge concerning specific chemicals used at the plant. It is recommended that if additional analyses of soils are conducted, the analyses should be restricted to those compounds known to have been used at the plant. It is also recommended that the sampling interval in each boring be adjusted according to the data already collected. It is unnecessary to sample each boring at 2-foot intervals to a total depth of ten feet. Based on soil samples already collected at the plant, contaminants in some areas do not extend more than a few feet below land surface.

Table 3 also indicates that the piles of crushed concrete and debris would be sampled and analyzed for EPA priority pollutants. This is unnecessary due to the detailed knowledge of specific chemicals actually used at the plant. It is recommended that the analyses be specific to the types of chemicals known to have been used at the plant. The rationale for the sampling methodology and number of samples from the crushed concrete and debris piles is not presented. The number of samples proposed for analysis seems excessive. Some sampling of crushed concrete piles has already been conducted (Hargis & Montgomery, 1983). The justification for additional sampling has not been presented.

Although information concerning the solid-liquid phase partitioning of DDT in stormwater runoff, and the relationship between grain size and DDT concentration, may be of some academic interest, it appears to have little direct application to design of remedial measures. Development of the data necessary to document this relationship with an adequate interval of confidence would be time-consuming and costly. If definition of off-site contamination is the objective, funds are better spent in sampling and defining that potential problem directly. Development of additional data as a basis for prediction of potential off-site transport would still require additional sampling for verification. The approach of direct sampling and analysis is preferred to developing predictive models. It is recommended that the proposed grain size analyses and

chemical analyses of the different grain size fractions be eliminated from the program.

The soil sampling conducted in 1983 is adequate to define the ranges of concentration of contaminants in the soils on-site. Although the surface soils have been disturbed by subsequent grading, no material has been removed from the site. The data already obtained concerning contaminant concentrations in the soils should be used to determine if capping the site is a viable remedial measure. Because of the low solubility of DDT in water, the primary mode of off-site contamination is transport of sediment containing DDT. This off-site transport could be effectively controlled by paving the site. If the entire site is to be paved, then definition of the lateral and vertical distribution of contaminants in the soils at the site is not necessary. If contaminants have migrated to the groundwater beneath the site, then the extent of those contaminants should be evaluated in the groundwater. Effective remedial measures to mitigate the groundwater contamination can then be designed. If there is a commitment to groundwater monitoring, and to mitigation of potential contamination, then the distribution of DDT and other contaminants in the soils at the surface of the site and beneath the site is not important. It is imperative that some remedial measures be implemented as soon as possible to abate stormwater runoff from the site. Paving the site is an obvious and effective remedial measure.

Task 14.

No rationale is presented for the extensive off-site soil sampling proposed in Task 14. It has already been established that some DDT is present in sediment in drainage ditches leaving the site (Hargis & Montgomery, 1983). It has also been demonstrated that there are residual DDT concentrations in the soils along the utility easement south of the plant. The regular grid pattern of sampling around the perimeter of the site, and to the south of the site, indicates that sampling is being designed without giving consideration to present knowledge of historic site operations and off-site sampling already conducted. Sampling already conducted in the easement area south of the site indicates that, in general, DDT concentrations tend to increase toward the drainage ditch. The DDT concentrations in soils away from the ditch in the

easement area are low. Based on these data, additional sampling of soils in the easement area is not necessary. Alternative remedial measures for the easement area should be identified and evaluated based on the data already available.

The rationale for the proposed sampling grid around the perimeter of the site is not presented. Based on sampling already conducted at the perimeter of the site, and information available concerning historic operations at the site, the number of perimeter samples should be substantially reduced.

The location of proposed surface water samples are indicated on Figure 7. It is recommended that the number of surface water sampling locations be reduced from the nine locations shown on Figure 7 to three locations. Adequate characterization of surface water quality could be obtained by sampling one location at the ditch which enters the Montrose property from the adjacent Jones Chemical Company, and sampling at two locations in the southeast corner of the property where drainage from the facility is collected and funneled into a single ditch. This would provide a composite sample of runoff leaving the plant site, and would reduce the number of samples and the analytical work required. There is no rationale presented for the number of samples to be collected within the site property, and in the ditch trending southward toward the Farmer Brothers Coffee Company.

Task 15. Air Sampling

The objective of the proposed air sampling is to characterize the ambient air DDT contamination associated with the Montrose facility site. These data are to be used in preparation of an endangerment assessment. Air-borne transport of contaminants from soils at the site could be eliminated by paving the site. This would eliminate the need for air sampling.

Tasks 16,17 and 18. Evaluation of Data, Preparation of Remedial Investigation Report, and Remedial Investigation Oversight

These tasks comprise compilation and assessment of data, presentation of data, descriptions of work performed

at the site, conclusions and recommendations. These work elements would be basic to any investigation of this type.

SECTION 3: PHASE II - FEASIBILITY STUDY WORK PLAN

The stated purpose of the Phase II study is to identify and evaluate appropriate remedial measures, select the most cost effective remedial alternative, and prepare a conceptual design of the selected alternative. Tasks 19 through 30 describe actions necessary for developing objectives, assessing endangerment, evaluating alternative mitigative measures, preparing post-closure monitoring plans, and conceptual design of the selected remedial alternative. It is recommended that the soil sampling data already collected on-site be used to identify and evaluate remedial alternatives for the soil contamination on-site. It appears that selection and implementation of some remedial action on-site would be desirable to abate transport of contaminated sediment off-site and eliminate potential air-borne transport of dust from the site. Capping the site with some type of pavement would obviously eliminate any further transport of contaminated sediment via stormwater runoff from the site, and would also eliminate the potential for air-borne transport of contaminated dust from the site. Capping the site would not inhibit additional investigation of the off-site soils and sediment contamination, and would not interfere with investigation of groundwater conditions either on-site or off-site.

If you have any questions about the foregoing, please contact me.

Very truly yours,

HARGIS & ASSOCIATES, INC.

David R. Hargis

David R. Hargis

1507